UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 01506

CSAH NO. 1

OVER THE

MISSISSIPPI RIVER

DISTRICT 3 - AITKIN COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 68)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 01506, Piers 2 and 3, were found to be generally in good condition with no defects of structural significance observed. The steel piles exhibited light surface corrosion with minor section loss. There was a heavy accumulation of timber debris at the upstream nose and throughout both piers. The channel bottom around the substructure units was well established and appeared stable with no evidence of significant scour and no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The steel pipe piles exhibited 100 percent coating failure with light corrosion and minor rust nodules with up to 1/8 inch deep pitting (1/16 inch penetration typical) over 50 percent of the surface area from 6 feet above the waterline to the channel bottom.

(B) The steel pipe piles at Pier 3 exhibited 1/16 inch surface delamination due to corrosion from 3 below the waterline to the channel bottom.

(C) A heavy accumulation of timber debris, consisting of 4-inch to 2-foot-diameter logs and branches, was observed at the upstream end and throughout the piles of both piers extending from the channel bottom to the waterline.

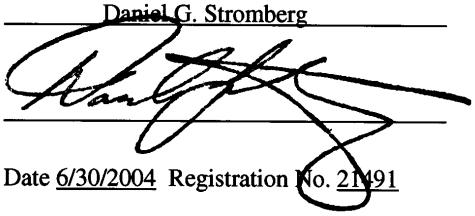
RECOMMENDATIONS:

(A) Remove timber debris from around the piles at Piers 2 and 3 during routine bridge maintenance, to eliminate excessive lateral loads on piers and the potential for scour.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

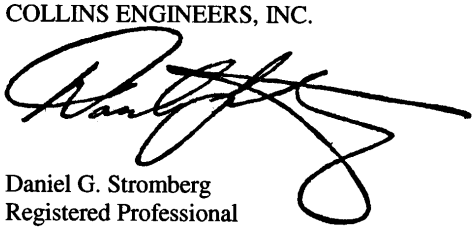
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 01506

Feature Crossed: The Mississippi River

Feature Carried: CSAH No. 1

Location: District 3 - Aitkin County

Bridge Description: The superstructure consists of five prestressed concrete beam simple spans. The superstructure is supported by two reinforced concrete abutments and four steel pipe pile piers with reinforced concrete caps. The abutments are also supported by steel pipe piles. The piers are labeled Pier 1 through 4 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 26, 2002

Weather Conditions: Sunny, "50E F

Underwater Visibility: "2 Feet

Waterway Velocity: "2 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 2 and 3

General Shape: Pier 2 consists of a single line of 8 piles. Pier 3 consists of two lines of 5 piles each.

Maximum Water Depth at Substructure Inspected: Approximately 14 feet.

4. WATERLINE DATUM

Water Level Reference: Top of the pile cap at the downstream end of Pier 3.

Water Surface: The waterline was approximately 19.2 Feet below reference. Waterline Elevation = 1187.1.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

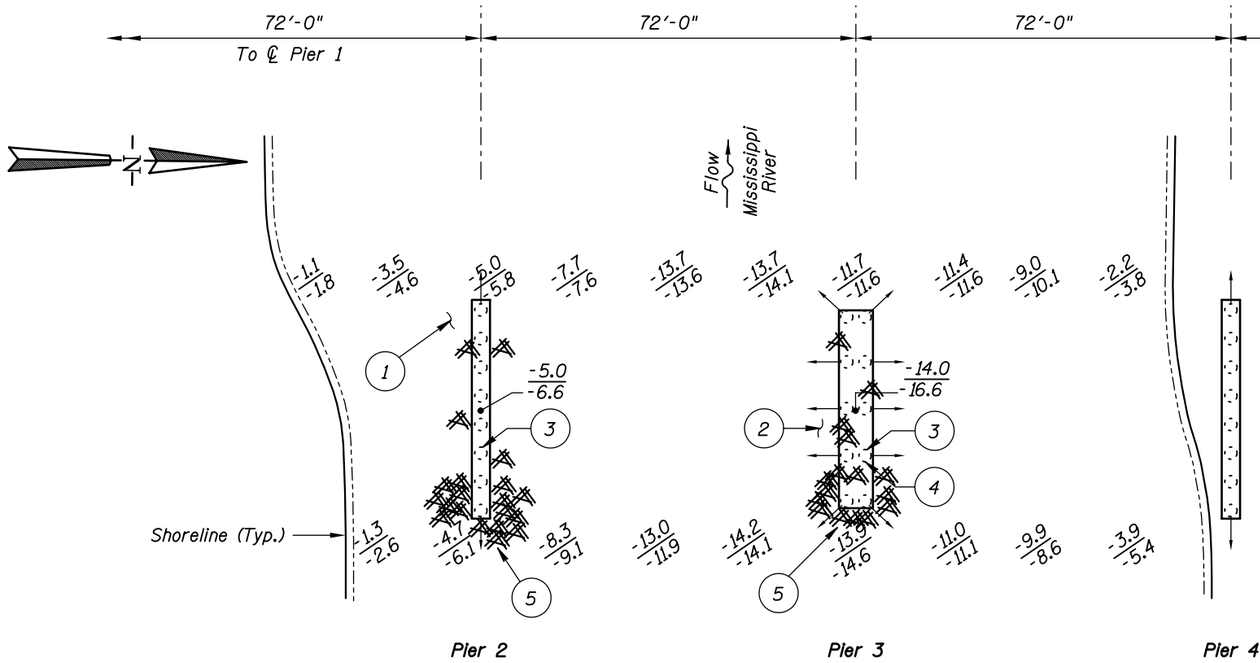
Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/09/02

Item 113: Scour Critical Bridges: Code I/90

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes ___X__ No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 2 and 3 were inspected underwater.
2. At the time of inspection on September 26, 2002, the waterline was located approximately 19.2 feet below the top of the pile cap at the downstream end of Pier 3. This corresponds to a waterline elevation of 1187.1 based on the previous report dated August 27, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

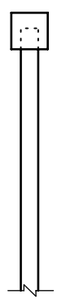
(1) The channel bottom consisted of silty sand with 6 to 8 inches of probe rod penetration.

(2) The channel bottom consisted of gravely sand with 4 inches of probe rod penetration.

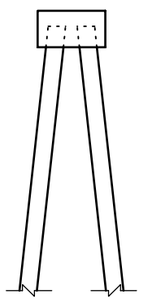
(3) The steel pipe piles exhibited 100 percent coating failure with light corrosion and minor rust nodules with up to 1/8 inch of pitting (1/8 inch typical) over 50 percent of the surface area from 6 feet above the waterline to the channel bottom.

(4) The steel pipe piles at Pier 3 exhibited 1/16 inch surface delamination due to corrosion from 3 below the waterline to the channel bottom.

(5) A heavy accumulation of timber debris, consisting of 4-inch to 2-foot-diameter logs and branches, was observed at the upstream end and throughout the piles from the channel bottom to the waterline.



TYPICAL END VIEW OF PIERS 1,2 & 3



END VIEW OF PIER 3

Legend

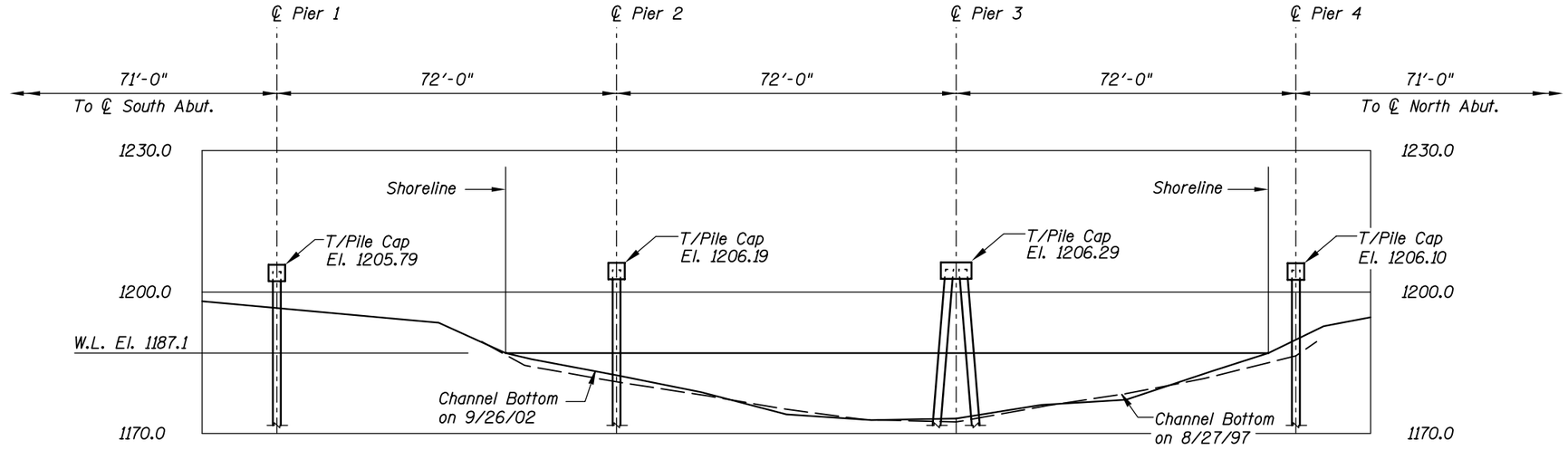
-2.0 / -5.2	Sounding Depth from Waterline (9/26/02) / (8/27/97)
	Steel Pile
	Battered Steel Pile
	Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

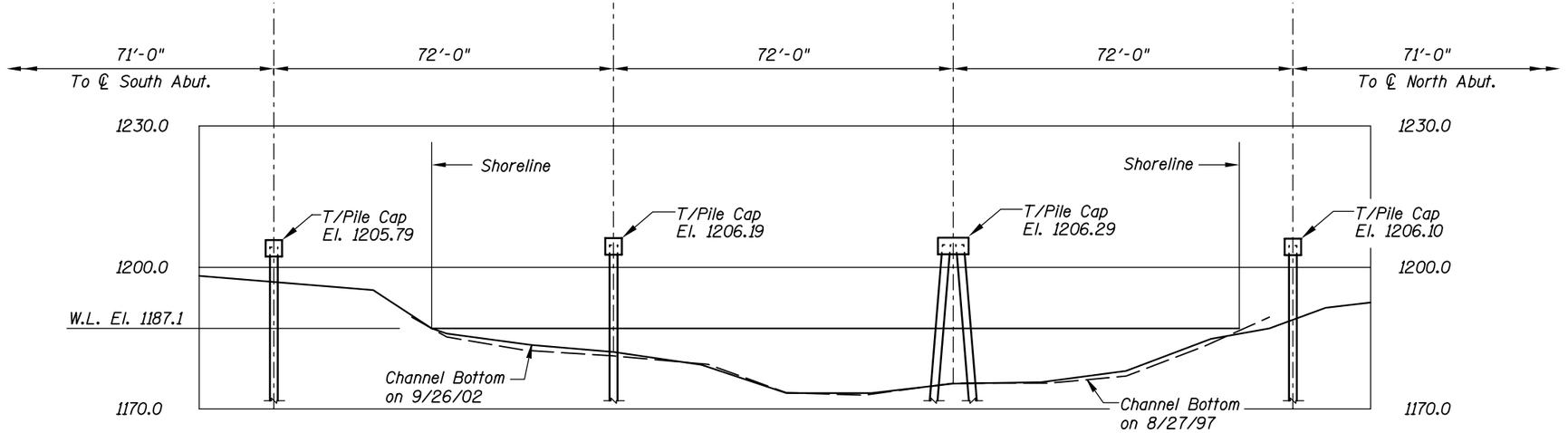
STRUCTURE NO. 01506
OVER THE MISSISSIPPI RIVER
DISTRICT 3, AITKIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120068		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

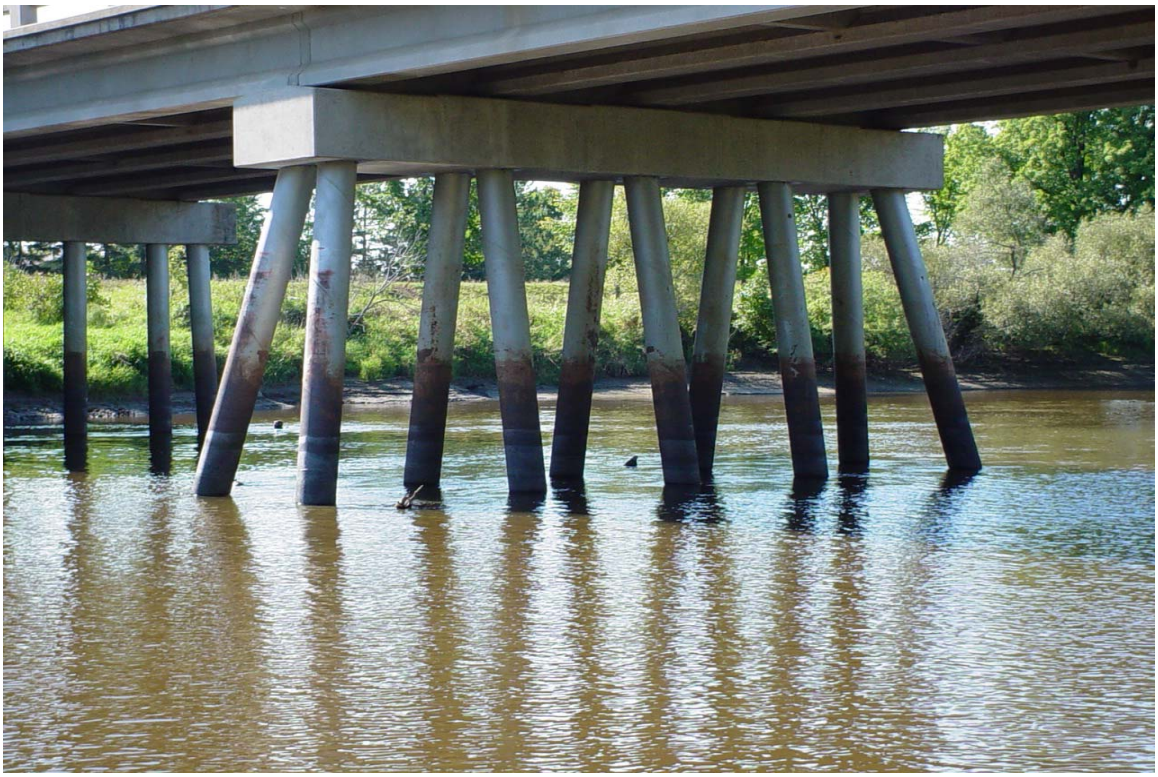
STRUCTURE NO. 01506
OVER THE MISSISSIPPI RIVER
DISTRICT 3, AITKIN COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	**COLLINS ENGINEERS, INC.**	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=30'
Code: 35120068		Figure No.: 2

Photograph 1. Overall View of Structure, Looking West.

Photograph 2. View of Pier 2, Looking Southwest.



Photograph 3. View of Pier 3, Looking Southwest.

Photograph 4. View of Pier 4, Looking Northeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 26, 2002

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 01506 WEATHER: Sunny, "50E F

WATERWAY CROSSED: The Mississippi River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR

OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookings

EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 12:10 P. M.

TIME OUT OF WATER: 12:50 P.M.

WATERWAY DATA: VELOCITY "2 f.p.s.

VISIBILIEY "2feet

DEPTH 14 feet maximum at Pier 3

ELEMENTS INSPECTED: Piers 2 and 3

REMARKS: Overall, the steel pipe piles were in good to satisfactory condition with 100 percent coating failure with light corrosion, minor rust nodules and up to 1/8 inch of pitting over 50 percent of the surface area from 6 feet above the waterline to the channel bottom. From 3 feet below the waterline to the channel bottom the corrosion on the steel piles at Pier 3 included 1/16 inch surface rust delamination. A heavy accumulation of timber debris, consisting of 4-inch to 2-foot-diameter logs and branches, was observed at the upstream end and throughout the piles of both piers extending from the channel bottom to the waterline.

FURTHER ACTION NEEDED: X YES _____ NO

Remove timber debris from around the piles at Piers 2 and 3 during routine bridge maintenance, to eliminate excessive lateral loads on piers and to restrict potential for scour.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 01506
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Mississippi River

INSPECTION DATE September 26, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 2	5.0’	7	N	N	9	N	7	8	N	N	6	6	N	7	N	8	N	N
	Pier 3	14.0’	6	N	N	9	N	6	8	N	N	6	6	N	6	N	8	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the steel pipe piles were in good to satisfactory condition with 100 percent coating failure with light corrosion, minor rust nodules and up to 1/8 inch of pitting over 50 percent of the surface area from 6 feet above the waterline to the channel bottom. From 3 feet below the waterline to the channel bottom the corrosion on the steel piles at Pier 3 included 1/16 inch surface rust delamination. A heavy accumulation of timber debris, consisting of 4-inch to 2-foot-diameter logs and branches, was observed at the upstream end and throughout the piles of both piers extending from the channel bottom to the waterline.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.